COMMENTS AND CRITICISMS

Dear 'Fessor:

A note to let you know that I am still alive and well after last week's excitement—and to thank you for the reading material which you have sent me. THE SCIENTIFIC MONTHLY I enjoy especially. I note especially one article in last December's issue, describing an imaginary visit of A. A. Michelson to Immanuel Kant, which you read and commented upon, and which I cannot forbear to write you about.

As you probably remember, what the whole article resolved itself into was a critique of the basic premises of the scientific method, in which this method came out somewhat second best at the hands of Philosophy. Judging from the points you marked, I would say that you seemed rather taken by the philosophic viewpoint yourself, and that is what leads me to bring you to task. I take a dim view of Philosophy in general, as I have probably told you. Nearly all of its systems, from the days of Plato to those of Spencer, when viewed objectively appear as nothing more than rationalizations of the prevailing moral values and metaphysical cosmology of the time in the light of the knowledge then available. You can see St. Augustine in the dark ages perfectly content with the theological views of the times, and everyone from Descartes to Hegel trying to "resolve the opposites" brought on by the new found knowledge in its impact upon beliefs which had been believed to have a divine, or at least an intrinsically valuable, origin. Your article is still carrying on the old game of trying to rope in science and break it to the philosophic halter.

Now it seems to me that the only philosophic school which ever brought to light anything of lasting value was the English "school" which began with Locke and ended with Hume, with old Bishop Berkeley sitting very uncomfortably in the middle. As your author pointed out himself, these men put a tack in the chair of philosophy which has caused its occupants to rest very uneasily ever since. Locke made the initial observation that we can know the external world only by our senses; the Bishop shrewdly pointed out that, since these senses are fallible, we cannot really be sure that the external world exists at all; and then Hume proceeded to hang the Bishop by his own cravat by failing to find any ground for the existence of the Almighty. It seems to me that no philosopher since has ever been able to find his way out of this impasse. With all due respect to Kant and his kindly views, he sounds very unconvincing.

Since that time, various other men, not philosophers at all, have even further strengthened the position of Hume. Not just the senses, but the human mind itself has been shown to be very, very fallible. The accumulated data of zoology reveal the brain as an adaptive mechanism, which adjusts the human to his environment. Psychology and physiology show the mind to be nothing but the manifestation of the working of the brain, much as the moving picture on the screen is manifestation of the working of the picture machine, and in no way independent of it; and they show too that the picture varies according to whether the machine has a high or low blood sugar, an excess of adrenal secretion, or a hyperactive thyroid. On top of all this, Freud, one of the truly great contributors of all time, showed that this mind can be shown by scientific observation *not* to be under the voluntary control of its possessor at all times; its thoughts can only be developed in those patterns determined for it by its hereditary capacity to think as developed and altered by past experience and present bodily well being. The synthesis of all of this is this: the human mind is not a reasoning mechanism at all, but the manifestation of a brain which is geared to produce THAT ANSWER WHICH IS MOST COMFORTABLE TO ITS OWNER, AND TO MAKE HIM BELIEVE THAT THIS ANSWER IS THE TRUTH. In the light of this knowledge we can see how it is that men—even the most learned and wise—cling so dearly to so many versions of the truth, and mankind advances by slow fits and starts; and we can see that the probability of man's reaching the truth by a process of "pure reason," without checking their results at every step by experiment, is quite remote, even in the case of a Kant. (Who, by the way, was a very neurotic individual.)

Now what of your philosophic method? I admit to you that we cannot know of the existence of the external world, or of the Almighty. Let me go farther, and point out that those men who try to do so by introspection give the impression of so many cows, contemplating their own bovinity. I agree that I can find no justification for my method within my own mind—but pragmatically (John Dewey is very useful) I must say that it makes no difference whether the external world exists or is just an idea. If we *assume* that it exists, and start from there, we seem to be able to alter the conditions of our existence vastly for the better by using the scientific method. And since this assumption has seemed to work, and been so fruitful, those of us who stand upon it cannot help but be amused at those philosophers who have started with another ASSUMPTION—that "I can reason"—and have lead themselves thence into a maze of sterile contradictions.

And so, 'Fessor, I don't find myself fazed by philosophers as so many men do. The typical old

philosophical argument that "we cannot conceive of such a situation," and therefore it cannot exist, or must be untrue, produces nothing from me but a horselaugh. Imagine Plato trying to conceive of radio, or Kant working out the present concept of the quantum, which is now a wave, and now a particle. Such an argument has no bearing upon the facts of the case; it is merely a commentary upon the limitations of the human mind.

The successful philosophers are the schizophrenics, who build their own mental world and retreat happily into it, while the rest of us hard-working individuals feed and shelter them.—(Lt. LAWRENCE E. HINKLE, JR., M.D., USNR)

Letter dated March 22, 1945 from a young naval officer to his father.—ED.

Proselyte or Temporize?

It is time that scientists, individually and as a group, should assert themselves. Not that they should organize as a pressure group for their own aggrandizement as some suggest, but that they should get at the job of performing the service to their country which they alone can do.

Scientists are now busy in laboratories throughout the country at the task of winning the war. They are hard working men, modest for the most part, and content with the satisfaction of knowing they have done their work well. Unfortunately, they are so modest that they are quite inarticulate outside their own profession. While officials in government, labor, and management virtually monopolize the public stage, the men who even made that stage possible remain in the background. Fortunately, public recognition of the role of scientists in winning the war is slowly emerging. This is as it should be, but it is not enough.

Equally as great responsibilities and opportunities lie ahead. Summed up, they can be stated in one sentence: Science is the major hope for creating the jobs which our people will need after the war.

Scientists are aware of this. They write papers on the subject for each other to read; they make speeches about it for each other to hear, and there is no essential argument. Naturally, they know that the problem is not so simple. Science alone cannot do it. Scientists need the support of private industry and of government for the facilities and the opportunity to work. They must have the support of these same groups to produce the results of their research in quantity. They must have the support of the distributing and servicing organizations which take these products to the public and enable the public to use them. They must have the support of the public itself. All are members of the team, but the scientists must create the products upon which all the others depend. Scientists must provide the ball for the rest of the team to carry.

All this seems clear and straightforward to the scientists. But is this enough? What do the people think who will benefit from the manufacture, sale, and consumption of these products? What do the managers of business think? What do the officials of government think?

To most laymen, science is still a mysterious and even awful thing. As for scientists, the cartoon caricatures of them as bearded, desiccated savants who ply their profession among nightmares of glass-blowing and behind locked doors is surprisingly close to being correct. True, the public reads accounts in the press of great discoveries and inventions, but too often these are "souped up" so that they bring a blush to the scientists involved. There is much to be read about tomorrow's dream world full of gadgets and leisure. But in these accounts there are many overstatements which, while sincerely meant, are damaging to the outlook of both the scientists and the public. How much better if the public could look upon scientists as individuals who practice no magic, and whose "miracles" are born and reared only by long and arduous hours of work? Scientists must tear away this veil of mystery and let the public see them as fellow humans.

In recent years, the managers of business have begun to learn the power of science when it is applied to their own problems, but their conversion is far from complete. Even in the chemical industry, there are islands of management holding out against the scientists with the defense that scientists are luxuries or necessary evils which are to be discarded when business declines, i.e., just when they are needed most. Among industries where the relation between science and business is not so obvious, there are still many converts to be made among the members of management.

In fairness it must be admitted that this is not altogether the fault of the managers. At least half lies with the scientists who for one reason or another are inept at meeting on common ground with businessmen. It is high time, therefore, that scientists meet them more than half way and demonstrate to them that in the diversified fruits of the laboratory lie the industries and the jobs of the future.

It is among certain officials of government, particularly the economists, that scientists have fared the worst with respect to the postwar period. Last year a contest on the subject of providing postwar employment was sponsored by a nationally known company whose very existence depends on certain fundamental natural processes. Most of the winners of this contest were government officials whose duties, directly or indirectly, were concerned with planning for the postwar period. In only two of all the winning plans was there more than passing reference to